

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

08 -12- 2004

Applicant's or agent's file reference
P03022

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/NO 2004/000228

International filing date (day/month/year)
23.07.2004

Priority date (day/month/year)
25.07.2003

International Patent Classification (IPC) or both national classification and IPC

B01F 3/04, B01F 5/00 // A01K 61/00

Applicant

YARA INTERNATIONAL ASA et al

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later. For further opinions, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE
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Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

This opinion has been established on the basis of a translation from the original language into the following language, _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- a sequence listing
 table(s) related to the sequence listing

b. format of material

- in written format
 in computer readable form

c. time of filing/furnishing

- contained in the international application as filed.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority for the purposes of search.

3. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	3-4, 7, 9, 13	YES
	Claims	1-2, 5-6, 8, 10-12	NO
Inventive step (IS)	Claims	3, 9	YES
	Claims	1-2, 4-8, 10-13	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO

2. Citations and explanations:

The invention

The claimed invention relates to a method and equipment for dissolving gas in a liquid. In particular, the invention relates to dissolution of oxygen in water in connection with farming of fish.

Disadvantages with prior art solutions for dissolution of a gas in a liquid are that they involve changes in direction and cross-section transitions for the flowing liquid, which will involve pressure loss.

The drawbacks are overcome by introducing the liquid tangentially into a cylindrical chamber, creating an eddy rotating about a horizontal axis. Pressure loss in the chamber is avoided.

Cited documents

These documents are cited in the International Search Report. The citations are considered to describe the most relevant prior art:

D1) EP-A1-1 112 773

D2) GB-A-1 570 202

A micro-bubble generating system for dissolving e.g. oxygen into e.g. water, is already known from D1 (p 3, lines 5-7). The system is intended for culture and growth of aquatic

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: BOX V

animals (p 3, lines 11-14).

The system comprises a cylindrical space (1) and a liquid inlet (2) provided in a tangential direction. Furthermore, there is a swirling gas-liquid mixture outlet (5) (fig. 1a & p 5, lines 15-19). According to figure 1a, the swirling takes place about a horizontal axis.

Reference is also made to D2, which describes similar technology to that of D1.

Analysis

Claim 1

The wording of claim 1 differs from that according to D1 in that a pressure loss is avoided. However, since the method carried out in D1 is similar to that according to present claim 1, a pressure loss in the system according to D1 is also considered to be avoided, as an inherent effect.

Thus, the invention defined in claim 1 is not new and consequently lacks novelty.

Claims 2, 5-6.

Claims 2, 5-6 describe a helical movement, and the kind of gas and liquid respectively. These features are disclosed in D1.

Claims 4, 7

Claims 4, 7 reveal pipes, nozzles and a pressure. Since both the present claims 4, 7 and D1 describe fish farming, the contents of these claims are considered to describe mere adjustments and lack inventive step.

Claim 8

Independent claim 8 describes similar features to those of claim 1.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

Claims 10-11

Claims 10-11 reveal an outlet arranged tangentially and vertically upwards. These features are taught in D1 (c.f. fig. 5a).

Claim 12

According to claim 12, pressure loss is avoided. This feature is also revealed in claim 1 and the invention in claim 12 thus lacks novelty.

Claim 13

The jet pipe and nozzles described in claim 13 lack an inventive step.

Conclusion

In accordance with the arguments stated above, the invention in claims 1-2, 5-6, 8 and 10-12 is not novel. The invention according to claims 4, 7 and 13 is novel, but not considered to involve an inventive step. All the claims are considered to have industrial applicability.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawing or on the question whether the claim are fully supported by the description, are made:

On p 4, line 18, nozzles are assigned the reference number 11. However, in claims 4 and 13 the nozzles are given the reference number 10.